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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte, MATTI HAMALAINEN
and OLLI HYVARINEN

Appellants

Appeal 2010-001319
Application 10/511,382
Technology Center 1700

Decided: April 19, 2010

Before SALLY GARDNER LANE, RICHARD TORCZON, and MICHEAL P. TIERNEY, *Administrative Patent Judges*.

LANE, *Administrative Patent Judge*.

DECISION ON APPEAL

I. STATEMENT OF THE CASE

The appeal, under 35 U.S.C. § 134(a), is from a Final Rejection of Appellant's claims 1-11. We have jurisdiction under 35 U.S.C. § 6(b). We reverse.

Appellant's application is directed to a method of recovering gold during copper production. (Spec. 1).

The Examiner relied on U.S. Patent 5,487,819, which issued January 30, 1996 ("Everett"). Claims 1, 2, 4, 5, 7, and 9-11 were rejected under 35 U.S.C. § 102(b) as being anticipated by Everett. The Examiner also rejected claims 3, 6, and 8 under 35 U.S.C. § 103(a) as being rendered obvious by Everett. Appellants do not argue separately for the patentability of any of the claims in these groups. We focus on claims 1 and 3 in our review. *See* 37 C.F.R. § 41.37(c)(vii).

II. PRINCIPLES OF LAW

"Anticipation requires a showing that each limitation of a claim is found in a single reference, either expressly or inherently." *Atofina v. Great Lakes Chem. Corp.,* 441 F.3d 991, 999 (Fed. Cir. 2006).

"By using the term 'consisting essentially of,' the drafter signals that the invention necessarily includes the listed ingredients and is open to unlisted ingredients that do not materially affect the basic and novel properties of the invention." *PPG Indust. v. Guardian Indust.* 156 F.3d 1351, 1354 (Fed. Cir. 1998).

III. FINDINGS OF FACT

1. Appellant's claim 1[1] recites:

> A method for the recovery of gold from a leaching residue or intermediate product containing iron and sulphur, which is generated in the chloride leaching of a copper sulphide raw material at atmospheric pressure, comprising
>
> leaching the gold from the residue or intermediate product in an aqueous solution consisting essentially of copper (II) chloride, sodium chloride and oxygen-containing gas;
>
> keeping the oxidation-reduction potential of the suspension formed at a value below 650 mV and the pH at a value of 1-3, whereby the iron and sulphur remain mainly undissolved;
>
> recovering the dissolved gold, and;
>
> discarding the undissolved residue as waste.

(App. Br., Claims App'x 1).

2. Everett teaches a leaching process for producing metals, including precious metals from minerals, such as ores. (Everett col. 1, ll. 9-11).

3. In the process taught by Everett, mineral and an electrolyte are countercurrently fed into a contacting unit so that the metals leach from the mineral. (Everett col. 2, ll. 20-41).

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[1] Claim 1 has been modified by inserting indentations where the punctuation of the claim indicates a different step of the method. 37 C.F.R. § 1.75(i).

4. Figure 1 of Everett is reproduced below:

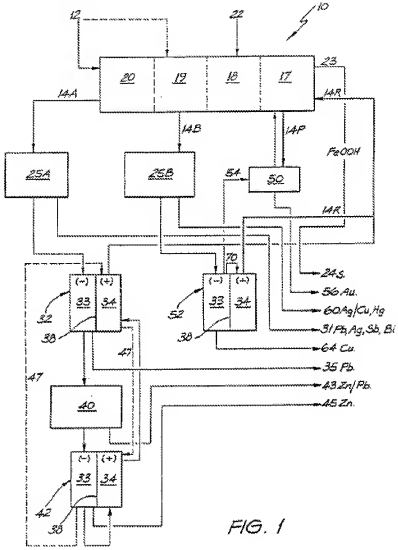

FIG. 1

Figure 1 depicts a schematic diagram of a process for producing one or more metals. (Everett col. 5, ll. 56-57). Element 50 of Figure 1 is a gold recovery unit which accepts electrolyte (14P) from a "halide complex leaching zone" (17) (*id.* col. 10, ll. 40-44, and col. 6, ll. 19-21) and cupric copper from a copper electrolytic cell (52) (*id.* col. 10, ll. 26-32).

5. Everett teaches that electrolyte (14P) from the "halide complex leaching zone" (17) is a "halex," such as $BrCl^-$, which results from two or more halides present in the electrolyte stream. (Everett col. 8, ll. 16-18 and ll. 36-46).

6. Everett teaches that the oxidation-reduction potential of the solution in the gold recovery unit (50) is below +600 mV, which causes the gold to come out of solution. (Everett col. 10, ll. 44-49).

7. Everett teaches that, in general, the electrolyte (14P) can be sodium chloride. (Everett col. 6, ll. 11-13).

8. Everett teaches that, in general, the pH of the electrolyte (14P) is between 0.5 and 3. (Everett col. 6, ll. 27-28).

9. Everett teaches that air or oxygen is fed to assist in the leaching process. (Everett col. 6, ll. 24-26).

10. Appellants' claim 3 recites:

> The method according to claim 1, wherein the pH of the suspension is kept at a value of 1.5 - 2.5.

(App. Br., Claims App'x 1).

11. Appellants' claim 6 recites:

> The method according to claim 1, wherein the temperature of the suspension is kept in the range between 80° C and the boiling point of the suspension.

(App. Br., Claims App'x 1).

12. Appellants' claim 8 recites:

> The method according to claim 1, wherein the oxygen: [sic] containing gas is oxygen enriched air.

(App. Br., Claims App'x 1).

IV. ISSUE

Does the use of the limitation "consisting essentially of" in Appellants' claimed leaching solution exclude the use of the additional halides as part of the leaching solution of Everett?

V. ANALYSIS

Appellants do not dispute that Everett teaches a method for recovering gold by leaching the residue or intermediate product in a solution of copper (II) chloride, sodium chloride and oxygen-containing gas, while keeping[2] the oxidation-reduction potential of the suspension formed at a value below 650 mV and the pH at a value of 1-3, recovering the dissolved gold, and discarding the undissolved residue as waste. (FFs[3] 2-9). Appellants dispute that the language "*consisting essentially of* copper (II) chloride, sodium chloride, and oxygen-containing gas" in their claim 1 (FF 1 (emphasis added)) allows for the additional halide needed to form a "halex" (for example bromine in $BrCl_2^-$), as taught by Everett (*see* FF 5; *see also* Everett col. 10, ll. 57-58: "FIG. 5 shows the leaching of gold by anodically generated halex species"), in the aqueous solution. (App. Br. 4-12). Appellants argue that these additional halides "materially affect the basic and novel properties of the invention." *See PPG Indust.*, 156 F.3d at 1354.

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[2] The punctuation and grammar of Appellants' claim 1 indicates that "keeping the oxidation-reduction potential of the suspension formed at value below 650 mV and the pH at a value of 1-3" is a separate step in the claimed method. (*See* Finding of Fact 1). The recited parameters, though, are characteristics of the leaching step and should be included in the leaching step.

[3] "FFs" indicates Findings of Fact.

"[I]n construing the phrase 'consisting essentially of' in appellants' claims, it is necessary and proper to determine whether their specification reasonably supports a construction that would include [additional elements]." *In re Herz*, 537 F.2d 549, 551 (CCPA 1976). Appellants point to the discussion in their specification of prior gold leaching methods that used a bromine complex, but were environmentally harmful. (Spec. 2, ll. 17-21). Thus, Appellants argue that the additional halides, such as bromine, necessary to form a halex are excluded by the language "consisting essentially of."

The Examiner disagrees that Everett teaches only using a halex compound. Instead, the Examiner points to two portions of Everett that he finds teach metal leaching without bromine. (Ans. 6 and 11). The Examiner points to the discussion in the Background Art section of Everett of a different process for leaching metals, called the "Cuprex Process." This process is described as using only ferric chloride to produce copper. (*See* Everett col. 2, ll. 3-7). The Examiner also points to data in Everett that compares the oxidation potential of NaCl solution with and without Br^-. (*See* Everett col. 8, ll. 47-61). The Examiner does not explain how either of these teachings includes all of the limitations of Appellants' claimed method – a method of recovering gold that comprises leaching an aqueous solution with oxygen-containing gas, wherein the oxidation-reduction potential of the suspension formed in below 650 mV and the pH is 1-3.

> [U]nless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102.

NetMoneyIN, Inc. v. Verisign, Inc., 545 F.3d 1359, 1371 (Fed. Cir. 2008). The Examiner does not explain how those of skill in the art would understand Everett to teach a method that includes all of the limitations cited in Appellants' claim.

Accordingly, we are persuaded us that the Examiner erred in rejecting the claimed method as anticipated by Everett.

The Examiner rejected claims 3, 6, and 8 under 35 U.S.C. § 103(a). Claims 3, 6, and 8 depend on claim 1 and further limit the pH range, the temperature of the suspension, and the type of oxygen-containing gas, respectively. (FFs 10-12). According to the Examiner, it would have been obvious to those in the art to modify the method taught in Everett to achieve these parameters. (Ans. 8-9). The Examiner relied on the anticipation of the method in Appellants' claim 1, which we find to be an error, as the starting point for the obviousness analysis. The rejection does not address why it would have been obvious to modify Everett to achieve the method of claim 1. Thus, the Examiner also erred in rejecting claims 3, 6, and 8.

VI. ORDER

Upon consideration of the record and for the reasons given,

the rejection of claims 1, 2, 4, 5, 7, 9, and 11 under 35 U.S.C. § 102(b) as being anticipated by Everett is REVERSED; and

the rejection of claims 3, 6, and 8 under 35 U.S.C. § 103(a) as being rendered obvious by Everett is REVERSED.

REVERSED

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cc:

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